STATE OF CALIFORNIA
Capital Outlay Budget Change Proposal (COBCP) - Cover Sheet
DF-151 (REV 07/20)

Fiscal Year	Business Unit	Department	Priority No.
2022-23	3540	Forestry and Fire Protection	MA-13

Budget Request Name	Capital Outlay Program ID	Capital Outlay Project ID
3540-061-COBCP-2022-GB	2485	0000920

Project Title
Statewide Construct Communications Facilities: Phase V

Project Status and Type
Status: ☐ New ☒ Continuing Type: ☒Major ☐ Minor

Project Category *(Select one)*

☐CRI *(Critical Infrastructure)*	☐WSD *(Workload Space Deficiencies)*	☐ECP *(Enrollment Caseload Population)*	☐SM *(Seismic)*
☒FLS *(Fire Life Safety)*	☐FM *(Facility Modernization)*	☐PAR *(Public Access Recreation)*	☐RC *(Resource Conservation)*

Total Request (in thousands)	Phase(s) to be Funded	Total Project Cost (in thousands)
$ 37,226	Construction	$ 41,618

Budget Request Summary

The Department of Forestry and Fire Protection (CAL FIRE) requests $37,226,000 General Fund for the construction phase of the Statewide Construct Communications Facilities: Phase V project. This is a continuing project.

Requires Legislation	Code Section(s) to be Added/Amended/Repealed	CCCI
☐ Yes ☒ No		6947

Requires Provisional Language	Budget Package Status
☐ Yes ☒ No	☐ Needed ☒ Not Needed ☐ Existing

Impact on Support Budget

One-Time Costs	☐ Yes	☒ No	Swing Space Needed	☐ Yes	☒ No
Future Savings	☐ Yes	☒ No	Generate Surplus Property	☐ Yes	☒ No
Future Costs	☐ Yes	☒ No			

If proposal affects another department, does other department concur with proposal? ☒ Yes ☐ No
Attach comments of affected department, signed and dated by the department director or designee.

Prepared By	Date	Reviewed By	Date
Department Director	**Date**	**Agency Secretary**	**Date**

Department of Finance Use Only

Principal Program Budget Analyst	Date submitted to the Legislature
Michael McGinness	1/12/2022

A. COBCP Abstract:

The Department of Forestry and Fire Protection (CAL FIRE) requests $37,226,000 General Fund for the construction phase Statewide Construct Communications Facilities: Phase V project. The project includes the replacement of existing telecommunications infrastructure at six communication facilities with new telecommunications towers, vaults, and other supporting infrastructure, as required, and the construction of an additional tower at a seventh site. The scope of work includes installation of new emergency backup generators (and solar, at the Chalks Mountain site), fuel systems, multi-purpose alarms, heating, venting, and cooling systems, and VHF (very high frequency) microwave communication equipment, complete with all necessary accessories. Additionally, the scope will include site work as needed. Total project costs are estimated at $41,658,000, including preliminary plans ($1,857,000), working drawings ($2,049,000), construction ($37,266,000), and two augmentations in the amounts of $175,000 (preliminary plans) and $311,000 (working drawings); a fund shift was also completed to transfer $90,000 from working drawings to preliminary plans, which is depicted in the two amounts provided for each phase previously. The construction amount includes $27,532,000 for the construction contract, $1,927,000 for contingency, $3,080,000 for architectural and engineering services, $40,000 for agency-retained items, and $4,687,000 for other project costs. The preliminary plans phase began in January 2017 and are estimated to be entirely completed in July 2022. The working drawings phase began at six of the seven sites in July 2020 and are estimated to be completed in November 2023. The construction phase is estimated to begin in July 2023 and estimated to be completed in March 2028.

B. Purpose of the Project:

This project is needed for the replacement of six CAL FIRE telecommunication facilities and to add an additional tower at an existing site to comply with a legislatively mandated plan to convert all telecommunication sites, within the state's Public Safety Microwave Network (PSMN), to digital technology.

BACKGROUND/HISTORY

CAL FIRE operates, manages, and maintains telecommunication equipment at 192 sites statewide. CAL FIRE mountaintop telecommunication facilities are remote and consist of a telecommunication tower, a securable, radio communication building (vault) which is environmentally controlled to house sensitive radio transmission equipment, and back-up electric generator(s) that enable the sites to remain operational during power outages. Depending on site limitations, these generators are housed either within the vault or in a stand-alone securable building. Where electrical power is not available at the site, facilities are powered by diesel/propane generators or solar panels.

CAL FIRE is a member of the Public Safety Radio Strategic Planning Committee established by the Legislature in December 1994. The committee has primary responsibility within state government to develop and implement a statewide, integrated, public safety communication system that facilitates interoperability among state agencies and coordinates other shared uses of the public safety spectrum, consistent with decisions and regulations of the Federal Communications Commission.

CAL FIRE's telecommunication sites provide the essential emergency communications linkage for CAL FIRE's fire protection and emergency response command and control, statewide. In addition, these facilities are essential components of California's PSMN that transmits 911 calls and emergency instructions during major public safety incidents, including floods, firestorms, and other natural disasters. Many of these CAL FIRE-managed sites are also utilized and relied upon by other public safety agencies for their telecommunications needs, including:

- California Governor's Office of Emergency Services - Public Safety Communications
- California Highway Patrol (CHP)
- California Emergency Management Agency, Homeland Security
- Federal Emergency Management Agency (FEMA)
- Federal Bureau of Investigation

- Bureau of Alcohol, Tobacco, and Firearms
- California Department of Water Resources
- California Department of Transportation/CalTrans (DOT)
- California Department of Parks and Recreation (DPR)
- Several Water Agencies
- Federal Air Guard
- Local County Agencies
- US Forest Service

These agencies rely upon CAL FIRE-managed sites for their exclusive radio transmission coverage over expansive and/or heavily populated areas of the state, making it critical to ensure ongoing reliability and functionality of these facilities.

The Public Safety Communications (PSC) was established on September 19, 1947 with the mission to ensure that quality telecommunication services and commodities are provided to all state agencies in the most cost-effective, efficient, and timely manner possible. This includes maximizing the use of state resources and the consolidation and joint use of telecommunications systems and services, where feasible. PSC is responsible for assessing the overall long-range telecommunication needs and requirements of the state, considering both routine and emergency operations, performance, cost, state-of-the-art technology, multi-user availability, security, reliability, and other factors deemed to be important to state needs and requirements.

Telecommunications Digital Technology Conversion Plan: The Legislative Analyst's Office (LAO) prepared an analysis of the 1995-96 Budget Bill for their Report to the Joint Legislative Budget Committee that required a plan to convert all telecommunications sites in the PSMN to digital technology. In the analysis, the LAO stated that "conversion is required to meet customer's needs." The conversion of the PSMN to digital technology supports new agency needs and provides better reliability with higher quality circuits.

Because CAL FIRE operates and manages most state-owned communication facilities within the State, CAL FIRE developed a Tower and Vault Master Plan (T&V Plan) dated December 18, 1995, which was adopted as part of the conversion plan. The T&V Plan was last updated March 22, 1998. The T&V Plan was developed to ensure continued reliability of the towers and vaults, which serve as critical structures in the Department's public safety radio system, and it also enables compatibility with the requirements of the PSMN. Public safety radio systems serve as critical links for fire and other public safety personnel throughout the state, serving to protect the lives and property of the citizens of California.

CAL FIRE T&V Plan: Six facility replacements and the addition of one tower at an existing site represent the Phase V highest priority projects, identified in the 1998 update to the T&V Plan:

1. Chalk Mountain Communications Facility – Replace Facility
2. Sierra Vista Communications Facility – Replace Facility
3. Mount Oso Communications Facility – Replace Facility
4. Bunchgrass Communications Facility – Replace Facility
5. Mount Pierce Communications Facility – Replace Facility
6. Pratt Mountain Communications Facility – Replace Facility
7. Banner Mountain Communications Facility – Construct Additional Tower

The Plan identified a total of 105 CAL FIRE tower and vault sites in need of renovation or replacement; 35 sites were replaced, renovated, or approved for replacement as of August 2014.

PROBLEM

The legislatively-mandated statewide conversion of all telecommunications sites to digital technology cannot be accomplished at Chalk Mountain, Sierra Vista, Mount Oso, Bunchgrass, Mount Pierce, Pratt Mountain, and Banner Mountain sites until the deteriorated, obsolete, unsound infrastructure is replaced.

These communication facilities were erected in the mid-1940s and have reached the end of their functional life. The vaults at each site are not adequate in size to accommodate the number of users and/or modern equipment for the new digital microwave technology and current code required clearances. Additionally, those constructed of metal do not meet the exacting climate control requirements of newer technology telecommunication equipment. All the vaults proposed for replacement are at risk of failure due to the age of the buildings and the extreme weather conditions they are subjected to on their mountain top locations.

The primary weighted priority consideration for a telecommunication site's replacement is a facility's location on the State's microwave backbone path that links multiple facilities. The Bunchgrass communication facility is critical to the Truckee-Lassen backbone route, with microwave paths running from Bunchgrass to Redding, Big Valley Mountain, and Burney. Mount Pierce and Pratt Mountain are also existing backbone sites for the microwave network. However, due to a lack of site capability, PSC has been unable to complete the conversion to digital technology on the "North Coast" route. Replacement of Mount Pierce and Pratt Mountain communication facilities will enable the digital conversion to continue.

Mount Oso is a stub path from Stockton and will become a backbone site once the facility replacement is complete, providing microwave paths from Mount Oso to Farmington, Pacheco Pass, and the Tracy CHP office.

Currently, PSC does not have microwave service into Sierra Vista and Chalk Mountain due to the present condition of the facilities. CHP, DPR, and other site users have requested microwave connectivity; upgrading these sites will enable PSC to meet these agency's needs.

The existing tower at Banner Mountain is fully loaded, precluding expansion of paths out of that site. An additional tower will allow network expansion to proceed.

Other prioritization criteria utilized in the T&V Plan include age and obsolescence, pole construction, height, expansion potential, and compliance with safety and environmental requirements, as well as requirements of the Occupational Safety and Health Administration. The six facilities proposed for replacement have the following elements that resulted in their prioritization for Phase V of the T&V Plan:

Inadequate Towers: The obsolete CAL FIRE towers cannot support current digital microwave technology required for the state's digital microwave conversion project along the state's microwave backbone path. The towers at these sites do not meet minimum requirements for height and structural integrity. The minimum requirements are based on a microwave system that requires two dishes, vertically separated by approximately 40' for every microwave path. The original towers were built for single point-to-point antenna systems. This new requirement adds at least 40' of height to every existing old-style tower and that extended height also adds to the need for more structural integrity and strength in the towers. Because the microwave system is a point-to-point radio system, structural rigidity is needed in the tower. If the tower moves too much in the wind or snow/ice loading, the radio path is lost, resulting in broken communications on those circuits until the tower moves back into position or the dish is realigned manually.

Vaults: The vaults at these sites are too small to accommodate the number of users and the new digital microwave technology. Additionally, those constructed of metal do not meet the climate control requirements of newer technology telecommunications equipment. All the vaults proposed for replacement are at risk of failure due to the age of the buildings and the extreme weather conditions they are subjected to on the mountain tops.

Marginal Equipment: The age and accumulated wear on environmental control equipment and back-up generators and their supporting fuel systems have rendered the telecommunication equipment susceptible to failure at any time. Environmental control equipment, installed in the vault

to filter dust, mitigate moisture and control the climate, have exceeded useful life, and have a significant failure risk associated with continued use without replacement.

Undersized fuel systems: Generator fuel systems at these sites are undersized, providing for only a few days of generator operation. Conversely, most mountaintop sites are inaccessible for refueling for weeks at a time during winter months. In recent years, during extended winter power outages or utility connection failures at certain sites, expensive helicopter resupply of propane and diesel fuel have been necessary to keep the generators running and the sites operational.

Potential Impact of Telecommunication Failure: The microwave network carries important mission-critical public safety communication traffic for CAL FIRE and the other state, local, federal, and private agencies previously listed. Operational failures at key telecommunication facilities may result in disastrous consequences by interrupting critical communications. The negative impacts of such disruption in emergency communications may be felt across large areas of the state and potentially statewide.

An example of the consequences of operational failure at a telecommunication facility is the Berryessa facility in Yolo County, which was engulfed by fire in November 2004, destroying the fire incident main command radio. CAL FIRE communications traffic was redirected to another radio site. However, this left a portion of the firefighting efforts without radio coverage on the Command Net, where each radio site covers a geographical area. The next closest repeater site did not cover that area because there is some overlap in radio coverage from site to site; radio waves only work on a line-of-sight basis (a repeater is an electronic device that receives a signal and retransmits it at a higher level and/or higher power or onto the other side of an obstruction so that the signal can cover longer distances). If there are any obstructions between the mountain top repeater and the ground radio unit, the result is minimal or zero radio coverage. This means mobile radios cannot hear or communicate to or from the mountain top sites that are not in their line-of-sight.

Another example of the consequences of operational failure at a telecommunication facility is the Bunchgrass facility in Shasta County, where, in February 1996, all emergency radio communications were blacked-out throughout a 100-mile corridor along Highway 299 due to the collapse of the CAL FIRE tower. The facility was blacked-out for two weeks until a temporary emergency tower could be erected.

Attaining the Department's mission is highly dependent on maintaining a continuous state of readiness to respond to emergencies, as well as rapid and well-coordinated deployment of diverse, decentralized emergency response resources. For example, a key objective in the Board of Forestry and Fire Protection's California Fire Plan is limiting 95 percent of all wildfires to ten acres or less. This requires rapid response, including the ability to achieve reliable, instantaneous communication throughout the State Responsibility Area (SRA). Achieving these objective yields big rewards in terms of life, property, and resource preservation. To this end, the state spends hundreds of millions of dollars annually for staff and equipment to maintain its high state of readiness to rapidly respond to wildfire and numerous other types of emergencies.

For these reasons, the Department seeks to continue replacement of inadequate and unsound communication facilities, to reduce the risk of catastrophe as a direct result of communication site failure(s).

Chalk Mountain

Although the Chalk Mountain site is small, it serves a large portion of the coast for the San Mateo-Santa Cruz Unit (CZU) and it is the only site covering that region. The Chalk Mountain site was the only site that provided radio coverage for the 2007 Martin Fire that threatened the old growth redwoods. Failure at this site would completely shut down radio communications along the coast where many traffic accidents and medical aides are reported. CHP and DPR have requested installation at the site but the site cannot support their requests in its current condition.

Due to the continued deterioration of the existing pole at this site, as well as a burn over during the CZU Lightning Complex fires of 2020, a temporary emergency tower has been placed at the site and will remain until the replacement project is complete and the new pole erected.

Sierra Vista

The Sierra Vista site, located in Calaveras County, serves the greater central portion of the county for radio coverage not only for CAL FIRE but also for CHP, DOT, and the Calaveras County Sheriff's Office. CAL FIRE depends on this site for coverage of the main dispatch net for CAL FIRE and the 13 Calaveras County Fire Districts who contract with CAL FIRE for their fire dispatching needs. Without this site, there would be no alerts received on the radio pagers for Mokelumne Hill Fire Station, Central Calaveras Fire District, and the San Andreas Fire District. There is no other site that overlaps this site for radio coverage. In the event of a failure, a portable repeater could be placed at the site but that requires several hours to accomplish, and it would be low power and result in coverage issues. Over one-third of the population of Calaveras County would be without radio coverage for both fire and law enforcement dispatching provided by the Calaveras County Sheriff's Office. The Sierra Vista communication facility is in the PSC plan for microwave installation as soon as the site is upgraded. The current vault and tower are not adequate to support the state microwave system and requests by CHP, CAL FIRE, and other users for microwave service at the site are waiting to be installed once the site is upgraded.

Mount Oso

The Mount Oso communication facility, located in Western Stanislaus County, is the only site that serves the SRA from Merced County north to Tracy in San Joaquin County and all the area west of Interstate 5 (I-5). Without this site's repeater, there would be no coverage for this vast region. The Santa Clara Unit depends on this site for all their main dispatch channel needs as well as their Command Net. The entire I-5 corridor depends on this site, as well as all the smaller cities along I-5 in Stanislaus and San Joaquin Counties. In fact, CAL FIRE uses this site frequently to cover areas across the Valley into the Sierra Nevada Foothills.

Mount Oso is a prominent site and very important to CAL FIRE, CHP, and others for communication needs. Every year, fires more than 5,000 acres occur multiple times within this region and this is the only site available for coverage; there are no other sites that overlap this area. Loss of this site would cripple multiple other sites because Mount Oso is the control point for CAL FIRE repeaters in the Santa Clara Unit. PSC plans to make Mount Oso a microwave backbone site as soon as the site is upgraded. They will then make Mount Oso a hub that serves Farmington, Pacheco Pass, and the Tracy CHP office.

Bunchgrass

The Bunchgrass communication facility is in Shasta County. Failure of the Bunchgrass site would result in the loss of radio coverage in the northern section of Shasta County and the Highway 299 corridor. Bunchgrass is on the State Microwave Backbone and is the only link for DOT to their Burney facility. The site is critical for the Truckee-Lassen Backbone route as it is the only redundant path to the backside of the Sierra Mountains via the Big Valley site. CAL FIRE responds to a high volume of traffic accidents and medical aides in this region.

The Bunchgrass site is also the main Wildland Fire Communications Radio Repeater for the northeast section of the Shasta Unit. The Big Bend, Hillcrest, and Burney Fire Stations are dispatched via this site from the Emergency Command Center (ECC) and these stations would be unable to respond to emergency 911 calls until an alternate communication site could be established.

Mount Pierce

The Mount Pierce communication facility, located in Humboldt County, is the North Coast Backbone site, the only microwave path to CAL FIRE's Fortuna ECC. Failure of Mount Pierce would cripple the intercom system, green phone lines, and control of multiple radio sites from the Fortuna Command Center. The Public Safety Microwave Backbone and the radio system cannot be upgraded until the existing facility is replaced. Mount Pierce also houses the main Humboldt Unit Repeater; failure would result in the loss of radio coverage to dispatch five fire stations, one inmate camp, the Rohnerville Air Attack Base, and the Kneeland Helitack Base. These facilities respond to over 4,400 incidents annually, including medical aides, structure fires, traffic accidents, hazardous materials spills, and vegetation fires. Over 100 square miles would be without radio coverage by multiple agencies, including law

enforcement, and 80,000-plus residents would be in danger of delayed response by emergency personnel.

Pratt Mountain

The Pratt Mountain communication facility is in Humboldt County. Failure of the Pratt Mountain site would impair the Microwave Backbone up the North coast and would eliminate CAL FIRE's ability to communicate on the Humboldt-Del Norte Unit (HUU) Local Net to dispatch three fire stations and one inmate camp. These facilities respond to an average of 645 incidents annually including, but not limited to, medical aides, structure fires, traffic accidents, hazardous materials spills, and vegetation fires. Over 50 square miles at the southern end of HUU would lose radio coverage by multiple agencies, including law enforcement, and 25,000+ residents would suffer delayed emergency response by emergency personnel.

Banner Mountain

The Banner Mountain communication facility is in Nevada County. The existing tower at Banner Mountain is fully loaded, precluding any further expansion of the paths out of that site for the state microwave system. Banner Mountain's prime location for public safety radio has overloaded the existing tower to the extent that if any more dishes or antennas are added the tower could fail. To implement the planned conversion expansion, another tower is required to complement the existing tower.

C. Relationship to the Strategic Plan:

This project relates to the following goals in the CAL FIRE 2019 Strategic Plan:

Goal: Seek to improve our core capabilities of emergency response, natural resources protection, and prevention and regulatory oversight.

Objective: Evaluate and improve existing emergency response capabilities.

D. Alternatives:

1. Fund construction phase funding to keep this continuing project moving forward.

- Replacement of inadequate and unsound communication facilities reduces the risk of catastrophe as a direct result of facility failure.
- Will bring these critical facilities into full compliance with the code and service level requirements for an essential services facility.
- Will provide the essential emergency communications linkage for CAL FIRE's fire protection and emergency response command and control statewide.

2. Defer this project.

- This project has moved through both preliminary plans and working drawings phases and not continuing the project at this time may result in additional funding being required of both phases due to possible, future changes to code and regulations.
- Will increase the probability of catastrophic failure of critical telecommunication facilities.
- Will not correct, in a timely manner, the deficiencies at the existing facilities that impede CAL FIRE's ability to provide critical telecommunication capabilities. The obsolete CAL FIRE towers cannot support current digital microwave technology required for the state's digital microwave conversion project along the state's microwave backbone path.
- Project costs will likely increase as time moves forward.

E. Recommended Solution:

1. Which alternative and why?

   The recommended solution is Alternative #1 — approve the construction phase funding to keep this project moving forward, allowing for the replacement of inadequate and unsound communication facilities, and the transition of these facilities to digital technology.

2. Detailed scope description.

   The project includes the replacement of existing telecommunications infrastructure at six communication facilities with new telecommunications towers, vaults, and other supporting infrastructure as required, and the construction of an additional tower at a seventh site. The scope of work includes installation of new emergency backup generators (and solar, at the Chalks Mountain site), fuel systems, multi-purpose alarms, heating, venting, and cooling systems, and VHF (very high frequency) microwave communication equipment, complete with all necessary accessories. Site work includes the demolition of replaced structures, extension of utilities, road and site paving, and security fencing, as required by site needs.

3. Basis for cost information.

   A 3-page estimate developed by the Department of General Services, dated January 13, 2021, utilizing California Construction Cost Index (CCCI) 6947.

4. Factors/benefits for recommended solution other than the least expensive alternative.

   Failure to implement the improvements outlined in this submittal will impact the operation of these mission-critical facilities including an increased probability of catastrophic failure of critical telecommunications sites across large areas of the state.

5. Complete description of impact on support budget.

   Maintenance and repair costs for the new facility will be temporarily lower following completion of project.

6. Identify and explain any project risks.

There are no risks associated with completion of this project.

7. List requested interdepartmental coordination and/or special project approval (including mandatory reviews and approvals, e.g., technology proposals).

   This project will require for each site: California Environmental Quality Act (CEQA) compliant environmental review, approval by the State Fire Marshal, Division of the State Architect, and completion of real estate due diligence. Facilities to be constructed on leased property may require lease revisions to secure sufficient long term property rights.

F. Consistency with Government Code Section 65041.1:

1. Does the recommended solution (project) promote infill development by rehabilitating existing infrastructure and how? Explain.

   Yes, the recommended solution replaces infrastructure at existing sites.

2. Does the project improve the protection of environmental and agricultural resources by protecting and preserving the state's most valuable natural resources? Explain.

   The site selection process includes environmental considerations. A state environmental planner inspects potential sites for relocation and provides generalized input and recommendations to the acquisition team to avoid acquiring as parcel for facility construction which would result in significant environmental effects or loss of agricultural resources. During the acquisition phase of the project, the Department completes intensive environmental review of the project pursuant to CEQA. This process could include changes to the project to avoid impacts and/or incorporating mitigation measures to eliminate or reduce the severity of environmental impacts.

3. Does the project encourage efficient development patterns by ensuring that infrastructure associated with development, other than infill, support efficient use of land and is appropriately planned for growth? Explain.

   Project planning includes incorporation within local government planning models. Growth-inducement potential is one of the potential environmental impacts addressed in the CEQA process.